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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B65D 83/00		A2	(11) International Publication Number: WO 00/56632 (43) International Publication Date: 28 September 2000 (28.09.00)
(21) International Application Number: PCT/EP00/01444		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 23 February 2000 (23.02.00)		(30) Priority Data: 9906640.9 24 March 1999 (24.03.99) GB	
(71) Applicant (<i>for all designated States except US</i>): GLAXO GROUP LIMITED [GB/GB]; Glaxo Wellcome House, Berkeley Avenue, Greenford, Middlesex UB6 0NN (GB).		(72) Inventors; and (75) Inventors/Applicants (<i>for US only</i>): ANDERSON, Gregor, John, McLennan [GB/GB]; (GB). HAILEY, Mark, Andrew [GB/GB]; (GB). RUSSELL, David, Joseph [GB/GB]; (GB). GODFREY, James, William [GB/GB]; Glaxo Group Ltd., Park Road, Ware, Herts SG12 0DP (GB).	
(74) Agent: PIKE, Christopher, Gerard; Pike & Co., Hayes Loft, 68A Hayes Place, Marlow, Buckinghamshire SL7 2BT (GB).		Published <i>Without international search report and to be republished upon receipt of that report.</i>	
(54) Title: VALVE			
(57) Abstract			
<p>There is provided a valve for an aerosol container. The valve comprises a valve body; within the valve body, a sealing ring and receivable by the sealing ring, a valve stem having a dispensing passage. The valve stem is slidably movable within the sealing ring from a valve-closed position to a valve-open position in which the interior of the valve body is in communication with the dispensing passage. The sealing ring is shaped such as to reduce the contact area between the sealing ring and the valve stem. Preferably, the valve is a metering valve.</p>			

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Claims

1. Valve for an aerosol container, the valve comprising a valve body; within said valve body, a sealing ring; and receivable by said sealing ring, a valve stem having a dispensing passage, the valve stem being slidably movable within the sealing ring from a valve-closed position to a valve-open position in which the interior of the valve body is in communication with the dispensing passage, wherein the sealing ring is shaped such as to reduce the contact area between the sealing ring and the valve stem.

5 2. Valve according to claim 1, wherein the area of contact between the sealing ring and the valve stem is less than 90% of what the area of contact would be if the sealing ring had square-cut edges.

10 15 3. Valve according to either of claims 1 or 2, wherein the sealing ring is formable by a moulding process.

4. Valve according to claim 3 wherein the moulding process is injection moulding.

20 5. Valve according to claim 3 wherein the moulding process is compression moulding.

6. Valve according to claim 3 wherein the moulding process is transfer moulding.

25 7. Valve according to any of claims 1 to 6, wherein the sealing ring is not movable relative to the valve body.

30 8. Valve according to claim 7, wherein the sealing ring is held within a cavity in the valve body.

9. Valve according to any of claims 1 to 8, wherein the stem-receiving part of the sealing ring has at least one rounded edge.

10. Valve according to any of claims 1 to 9, wherein the stem-receiving part of the sealing ring presents a lobed surface to the stem.

5 11. Valve according to claim 10, wherein the lobed surface and the stem-receiving part of the stem define one or more wells.

12. Valve according to claim 11, wherein said one or more wells contain lubricant material therein.

10 13. Valve according to any of claims 1 to 12, wherein the valve body has a metering chamber, a sampling chamber and therebetween is provided a second sealing ring within which the stem is slidably movable, the valve stem having a transfer passage such that in the valve-closed position the dispensing passage is isolated from the metering chamber and the metering chamber is in communication with the sampling chamber via said transfer passage, and in the valve-open position the dispensing passage is in communication with the metering chamber and the transfer passage is isolated from the metering chamber, wherein the second sealing ring is shaped such as to reduce the contact area between the second sealing ring and the valve stem.

20 14. Valve according to claim 13, wherein the area of contact between the second sealing ring and the valve stem is less than 90% of what the area of contact would be if the second sealing ring had square-cut edges.

25 15. Valve according to either of claims 13 or 14, wherein the second sealing ring is formable by a moulding process.

16. Valve according to claim 15 wherein the moulding process is injection moulding.

30 35 17. Valve according to claim 15 wherein the moulding process is compression moulding.

18. Valve according to claim 15 wherein the moulding process is transfer moulding.

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(22) International Filing Date: 23 February 2000 (23.02.00)			
(30) Priority Data: 9906640.9 24 March 1999 (24.03.99) GB			
(71) Applicant (for all designated States except US): GLAXO GROUP LIMITED [GB/GB]; Glaxo Wellcome House, Berkeley Avenue, Greenford, Middlesex UB6 0NN (GB).			
(72) Inventors; and			
(75) Inventors/Applicants (for US only): ANDERSON, Gregor, John, McLennan [GB/GB]; (GB). HAILEY, Mark, Andrew [GB/GB]; (GB). RUSSELL, David, Joseph [GB/GB]; (GB). GODFREY, James, William [GB/GB]; Glaxo Group Ltd., Park Road, Ware, Herts SG12 0DP (GB).			
(74) Agent: PIKE, Christopher, Gerard; Pike & Co., Hayes Loft, 68A Hayes Place, Marlow, Buckinghamshire SL7 2BT (GB).			

(54) Title: VALVE

(57) Abstract

There is provided a valve for an aerosol container. The valve comprises a valve body, within the valve body, a sealing ring and receivable by the sealing ring, a valve stem having a dispensing passage. The valve stem is slidably movable within the sealing ring from a valve-closed position to a valve-open position in which the interior of the valve body is in communication with the dispensing passage. The sealing ring is shaped such as to reduce the contact area between the sealing ring and the valve stem. Preferably, the valve is a metering valve.

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REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty

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International Application No.

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Applicant's or agent's file reference
(if desired) (12 characters maximum) PG3654/ PCT

Box No. I TITLE OF INVENTION

Valve

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below).

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Ware, Herts.
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This person is:

applicant only

applicant and inventor

inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

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State (i.e. country) of residence:

GB

This person is applicant all designated States all designated States except the United States of America the United States of America only the States indicated in the Supplemental Box

Further applicants and/or (further) inventors are indicated on a continuation sheet.

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Pike & Co.,
Hayes Loft, 68A Hayes Place
Marlow, Buckinghamshire
SL7 2BT, GB

Telephone No.: 01628-471869

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Ware, Herts.
SG12 ODP
GB

This person is:

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 applicant and inventor
 inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

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GB

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RUSSELL, David Joseph
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This person is:

- applicant only
 applicant and inventor
 inventor only (If this check-box is marked, do not fill in below.)

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Sheet No 4

Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box Where earlier application is		
Filing Date of Earlier Application (day/month/year)	Number of earlier application	national application: country	regional application: * regional Office	international application: receiving Office
item (1) (24.03.99) 24 March 1999	9906640.9	GB		
item (2)				

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY	Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority): Date (day/month/year) Number Country (or regional office)		
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Box. VIII CHECK LIST; LANGUAGE OF FILING	
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description (excluding sequence listing part) : 11	2. <input checked="" type="checkbox"/> separate signed power of attorney
claims : 4	3. <input checked="" type="checkbox"/> copy of general power of attorney; reference number, if any:
abstract : 1	4. <input type="checkbox"/> statement explaining lack of signature
drawings : 3	5. <input checked="" type="checkbox"/> priority document (1) identified in Box No. VI as item(s): 1
sequence listing part of description :	6. <input type="checkbox"/> translation of international application into (language):
Total number of sheets : 23	7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material
	8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form
	9. <input type="checkbox"/> other (specify):
Figure of the drawings which should accompany the abstract: None	Language of filing of the international application: English

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Christopher Gerard Pike
Agent for the Applicants

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